KY 813 Interchange Study

Mortons Gap, Kentucky

Hopkins County

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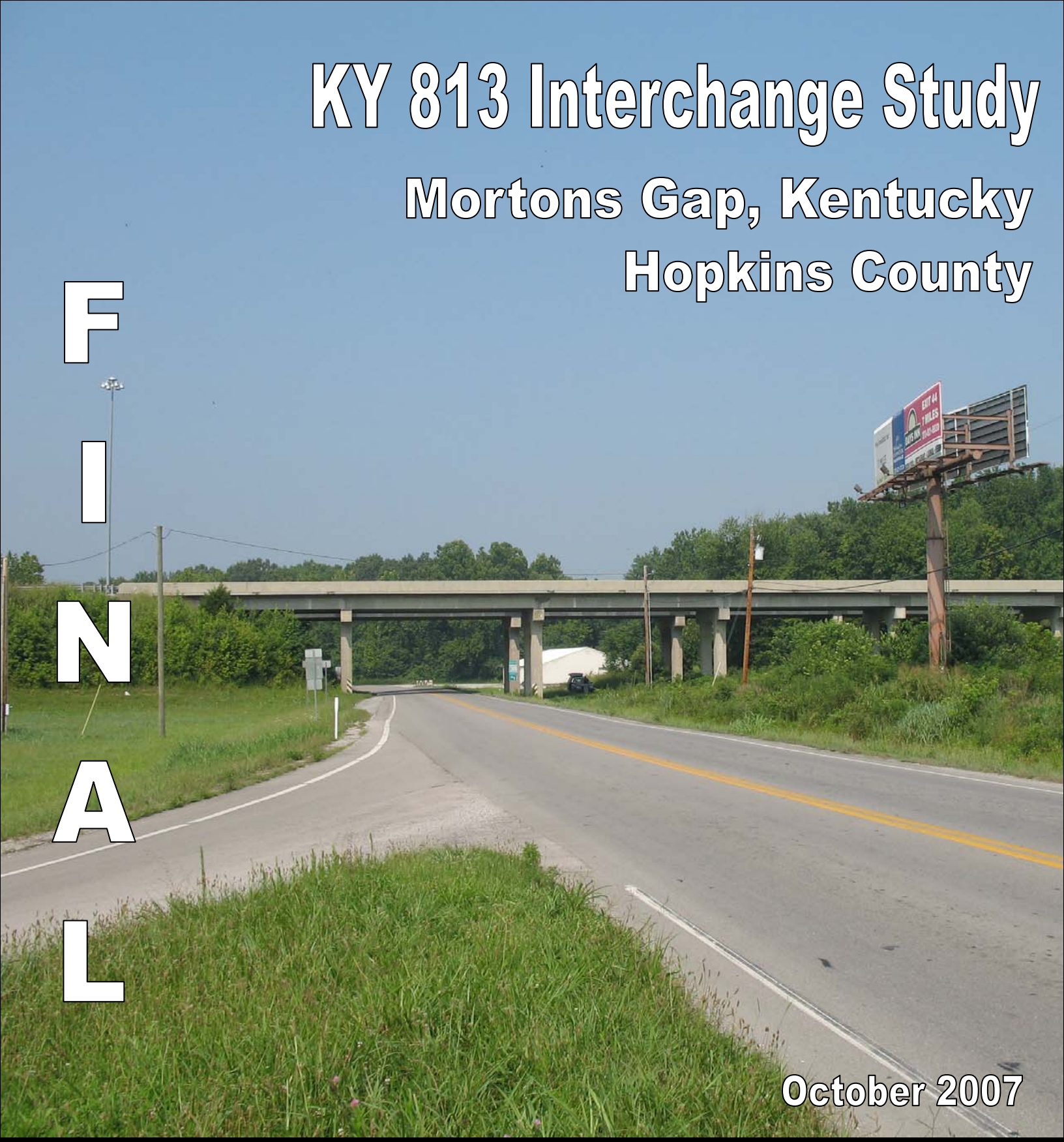

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Prepared for:

Kentucky
UNBRIDLED SPIRIT™

Kentucky Transportation Cabinet

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I. INTRODUCTION

The KY 813 Interchange Study is an independent work element that will complement the second phase of the I-69 Corridor Planning Study from Eddyville to Henderson, Kentucky. The purpose of this Interchange Study is to gather critical information necessary to develop and evaluate alternatives for the possible reconstruction of the KY 813 interchange (Exit 37) along the Edward T. Breathitt Pennyrile Parkway (Breathitt Parkway). Through this Interchange Study, the Kentucky Transportation Cabinet (KYTC) is able to identify a potential solution for the transportation needs at the KY 813 interchange.

A. Project Location

The study area for the KY 813 Interchange Study is in Hopkins County and includes two routes:

- KY 813 for one (1) mile on either side of the Breathitt Parkway; and
- The Breathitt Parkway for one (1) mile on either side of the KY 813 interchange.

The KY 813 interchange is the first interchange north of the Breathitt Parkway and the Wendell H. Ford Western Kentucky Parkway (Ford Parkway) interchange. Portions of both the Breathitt and Ford Parkways are proposed to be upgraded to interstate facilities and a study is underway to more clearly define the transition from parkway to interstate status.

The KY 813 interchange would be located along the proposed I-69 corridor, an economic development corridor identified as part of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. I-69 is intended to serve as a freight corridor from Port Huron, Michigan to the Texas/Mexico border, crossing through eight states including Kentucky. While an independent project, the KY 813 Interchange Study should consider impacts to I-69 as part of the evaluation process. The project study area is shown in **Figure 1**.

The KY 813 interchange provides access to Mortons Gap, a city with approximately 950 residents. City Hall is about two (2) miles southwest of the interchange. At the interchange, commercial properties exist in three of the four quadrants, including a Pilot Truck Stop in the northeast quadrant. Surrounding farmlands are low lying and prone to flooding. Photos of the study area are shown in **Appendix A**.

B. Study Objectives and Tasks

The primary objectives of this study are to:

- Better define the project purpose and need;
- Identify and evaluate potential improvement alternatives; and
- Make recommendations for future improvements.

To accomplish these objectives, the study is also intended to:

- Afford an opportunity for local officials and stakeholder input so that project needs, improvement alternatives, and potential issues and concerns can be clearly defined and addressed at the earliest stage of project development;
- Identify potential environmental and constructability issues; and

- Help expedite the project development process.

C. Programming and Schedule

Currently, there are no funds programmed in the Kentucky Enacted Six-Year Highway Plan FY 2007-2012 for this project beyond this study.

Figure 1. Study Area

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II. EXISTING CONDITIONS

Characteristics of the major highways in the study area (KY 813 and the Breathitt Parkway) are identified in the following sections. Included are data and/or information on transportation systems, geometric characteristics, bridges, traffic conditions, and crash history. These features are summarized from the KYTC Highway Information System (HIS) database.

A. Highway Systems

Major highway systems information is shown for KY 813 and the Breathitt Parkway in **Table 1**, including the State Primary Road System, Functional Classification System, National Highway System (NHS), National Truck Network (NN), and Designated Truck Weight Class. System descriptions for the main classifications are listed below.

- State-maintained roads in Kentucky are classified into one (1) of five (5) categories under the State System, ranging from the highest order classification to the lowest as follows: Interstates, Parkways, Other State Primary roads, Rural Secondary roads, and Supplemental roads.
- One of 13 functional classification categories is assigned to each state-maintained road in Kentucky, based on the function the road provides and whether the road is an urban or rural road. These are classified from highest to lowest and by geographic designation such as: Rural Interstate, Urban Interstate, Other Rural Freeways and Expressways (Principal Arterial), Other Urban Freeways and Expressways (Principal Arterial), Other Rural Principal Arterial, Other Urban Principal Arterial, Rural Minor Arterial, Urban Minor Arterial, Rural Major Collector, Urban Collector, Rural Minor Collector, Rural Local, and Urban Local.
- The National Highway System (NHS), first established in 1991 by the Intermodal Surface Transportation Efficiency Act (ISTEA), includes Interstate Highways and other significant Principal Arterials important to the nation's economy, defense, and mobility.
- The National Truck Network (NN) includes roads designated for use by commercial trucks with increased dimensions (102 inches wide; 13 feet, 6 inches high; semi-trailers up to 53 feet long; and trailers up to 28 feet long – not to exceed two (2) trailers per truck).
- Kentucky Revised Statutes require weight limits on the state-maintained highway system. There are three (3) weight classification limits: (1) AAA – 80,000 lbs. maximum gross vehicle weight; (2) AA – 62,000 lbs. maximum gross vehicle weight; and (3) A – 44,000 lbs. maximum gross vehicle weight. [NOTE: For special circumstances, occasional exceptions may be granted for over-dimensional or overweight vehicles by permits issued by the KYTC, Division of Motor Carriers.]

B. Geometric Characteristics

Geometric characteristics for the two major routes in the study area are listed in **Table 2**, including the number of lanes, lane widths, shoulder widths, roadway type, local terrain, and route speed limits. The percent passing sight distance information was not available in KYTC's HIS database for KY 813.

Table 1. Highway Systems Information

KY 813
Hopkins County – MP 9.300 to MP 11.300 o State System – Rural Secondary o National Truck Network – No o National Highway System – No o Functional Classification – Rural Minor Collector o Truck Weight Class – AAA
Breathitt Parkway
Hopkins County – MP 36.000 to MP 38.000 o State System – Other State Primary o National Truck Network – Yes o National Highway System – Yes o Functional Classification – Other Rural Principal Arterial o Truck Weight Class – AAA

Source: KYTC Highway Information Systems (HIS) Data, 2007

Table 2. Geometric Characteristics Information

KY 813
Hopkins County – MP 9.300 to MP 11.300 o Undivided, two lane highway o Rolling terrain o 9 to 10 foot lane widths with 3 foot unpaved shoulders o 55 mph posted speed limit
Breathitt Parkway
Hopkins County – MP 36.000 to MP 38.000 o Divided, four lane fully controlled access highway o Rolling terrain o 36 foot median o 12 foot lane width o 4 foot inside shoulder and 10 outside shoulder o 65 mph posted speed limit

Source: KYTC Highway Information Systems (HIS) Data, 2007

C. Bridges

Two sizeable structures lie within the project area: the twin Breathitt Parkway Exit 37 bridges over KY 813. These structures are 318 feet in length with a 34 foot clearance between New Jersey bridge rails. The combined average daily traffic (ADT) on both bridges is 18,450 vehicles per day. The bridges are neither structurally deficient nor functionally obsolete.

D. Traffic and Level of Service

The study included a two-tiered capacity analysis to determine the adequacy of the existing roadways to serve the existing and future year traffic flow. This analysis focused on movements along the mainline at the interchange and at the ramp termini adjoining the local street network, i.e., KY 813. Each of these investigations was completed for the 2006 existing traffic scenario, the 2030 without I-69 scenario, and the 2030 with I-69 scenario (assuming the Breathitt Parkway is designated as a section of the I-69 freight corridor) using HCS+ and Synchro 7.0 software packages.

1. Mainline Parkway Capacity

Traffic volumes were forecast along the I-69 corridor in Kentucky for each of the three scenarios as part of an ongoing study; these values were used to understand how Exit 37 functions along the existing parkway route. The 2006 daily traffic volumes are shown in **Figure 2**, along with existing truck percentages. **Figure 3** shows the design hourly volumes (AM and PM peak hours) and the turning movement counts for the ramp ends intersecting KY 813 (collected December 2005).

To project 2006 volumes to the 2030 scenarios, the following growth rates were determined:

- Year 2030 without I-69: based on local knowledge, development patterns, previous KYTC Statewide Travel Demand Model information, and historic traffic data, an existing annual growth rate of 1.3% was assumed for the current conditions.
- Year 2030 with I-69: including this corridor in the interstate system will likely impact traffic growth rates, so a rate of 2.3% annual growth was assumed to account for the impacts of I-69. A 3% increase was assumed for trucks making the through movement along I-69.

For freeway facilities, level of service (LOS) provides a qualitative measure of capacity. In urban areas, LOS D or better is acceptable; in rural areas LOS C or better is acceptable. For freeways, LOS is measured in terms of density – the number of cars per lane per mile. For ramps, a density of 28 cars/lane/mile corresponds to LOS C; for mainline segments, this translates to 35 cars/lane/mile.

Results of the LOS analysis are presented in **Table 3**. Vehicle densities increase as traffic volumes increase, but most components of the interchange still function within acceptable capacity levels. The exception is the southbound off-ramp, which reaches a LOS of D in the 2030 with I-69 scenario.

Figure 2. 2006 Daily Traffic Volumes and Percent Trucks

Figure 3. 2006 Design Hour and Peak Hour Volumes

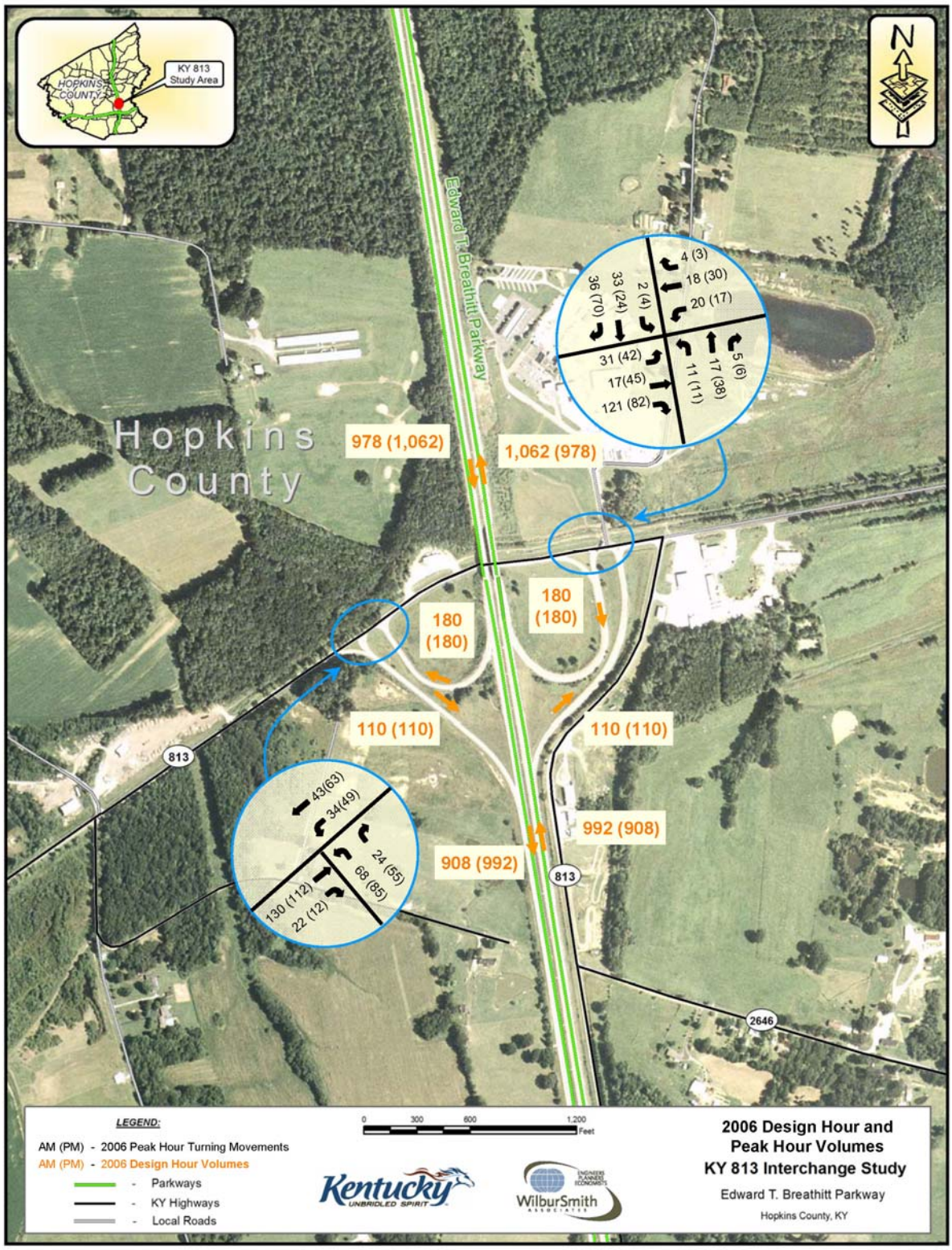


Table 3. Peak Hour LOS and Density for Breathitt Parkway Exit 37

		2006		2030 without I-69		2030 with I-69	
	Component	Density[1]	LOS	Density[1]	LOS	Density[1]	LOS
Northbound	Mainline south of Exit	10.4 / 9.5	A / A	14.1 / 12.9	B / B	18.5 / 16.9	C / B
	Off Ramp Junction	16.2 / 15.2	B / B	20.8 / 19.6	C / B	26.1 / 24.5	C / C
	Mainline between Ramps	9.2 / 8.3	A / A	12.5 / 11.4	B / B	16.4 / 14.9	B / B
	On Ramp Junction	15.4 / 14.5	B / B	19.8 / 18.5	B / B	24.7 / 23.1	C / C
	Mainline north of Exit	11.0 / 10.1	A / A	14.9 / 13.7	B / B	19.5 / 18.0	C / C
Southbound	Mainline north of Exit	10.1 / 11.0	A / A	13.7 / 14.9	B / B	18.0 / 19.5	B / B
	Off Ramp Junction	17.0 / 18.0	B / B	21.9 / 23.3	C / C	27.6 / 29.3	C / D
	Mainline between Ramps	8.3 / 9.2	A / A	11.4 / 12.5	B / B	14.9 / 16.4	B / B
	On Ramp Junction	15.0 / 15.9	B / B	19.1 / 20.5	B / C	23.9 / 25.6	B / C
	Mainline south of Exit	9.5 / 10.4	A / A	12.9 / 14.1	B / B	16.9 / 18.5	B / B

[1] Density measured as passenger cars/lane/mile
Note: Measurements report AM / PM peak hour values

2. Capacity on KY 813

Turning movement counts were conducted on KY 813 in November and December of 2005 at each of the ramp entrances and exits and at the entrance to the truck stop in the northeast quadrant of the interchange. Analysts modeled the existing geometry of the local network to determine capacity constraints. The same growth rates were applied to these volumes to consider the 2030 scenarios with and without I-69 traffic.

For unsignalized intersections, LOS is a calculation based upon delay experienced for turning movements by approach. In rural areas, a LOS C is considered acceptable, which corresponds to an average of 25 seconds of delay or less.

Results of this analysis are presented in **Table 4**. Minor increases in delays are anticipated to occur as volumes increase, but LOS remains within acceptable levels for all three scenarios.

Table 4. Peak Hour LOS and Delay for KY 813

	2006		2030 without I-69		2030 with I-69	
Approach	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
KY 813 at SB On Ramp	2.0 / 2.2	A / A	2.1 / 2.3	A / A	2.3 / 2.5	A / A
SB Off Ramp at KY 813	10.5 / 10.8	B / B	11.6 / 12.3	B / B	13.1 / 14.8	B / B
KY 813 at NB On Ramp	3.6 / 2.3	A / A	3.7 / 2.4	A / A	3.8 / 2.5	A / A
Truck Stop on KY 813	9.8 / 10.2	A / B	10.1 / 10.8	B / B	10.6 / 11.6	B / B
NB Off Ramp at KY 813	9.4 / 9.9	A / A	9.7 / 10.3	A / B	9.9 / 10.9	A / B

Note: AM / PM

E. Crash Analysis

The current configuration of the KY 813 interchange with the Breathitt Parkway is a flopped diamond with deficient taper lengths for each of the four ramps. Three schools in the vicinity and a high volume of trucks accessing an adjacent truck stop also contribute to safety concerns at this location. To further examine the impact that these factors may have on traveler safety, a detailed safety analysis was undertaken.

Crash data from the CRASH database were considered along the study portion of KY 813 (milepoints 9.300 through 11.300 in Hopkins County). Additionally, crashes occurring along the Breathitt Parkway within a mile of the interchange (milepoints 36.000 through 38.000) were also investigated. The locations of the crashes occurring from January 2002 through April 2006 with valid milepoint designations are shown in **Figure 4**.

To analyze these incidents, Wilbur Smith Associates (WSA) used the methodology developed by the Kentucky Transportation Center (KTC). This analysis locates roadway "segments" based upon traffic volumes and geometric characteristics to identify crash concentrations. It also determines the location of 1/10 mile "spots" which demonstrate high crash frequencies. Each segment or spot is assigned a critical rate factor (CRF) based on formulas published by KTC. The CRF is one measure of the safety of a road; it shows the crash rate as a ratio to the average crash rate for sections of roadway of the same functional classification throughout the state. If the rate is 1.00 or greater, it is assumed that crashes are happening due to circumstances that cannot be attributed to random occurrence.

Once a location has been determined to be over the critical rate, it should be studied more specifically to ascertain if there are remedial actions that should be taken to improve the overall safety of the facility. Computations for the segments and spots along the primary roadways are summarized in **Tables 5** and **6**. Spots/segments with a CRF greater than 1.0 are shown in red; sites nearing this value (0.9 or greater) are shown in purple and should be considered potential high crash spots/segments.

Figure 4. Crash Locations

Table 5. Vehicle Crash Segments for Breathitt Parkway Exit 37

Route	Begin MP	End MP	Length (Miles)	ADT	Vehicle Crashes				Critical Rate Factor
					Fatal	Injury	PDO	Total	
EB PKWY	36.000	37.070	1.070	18,100	0	9	34	43	0.80
EB PKWY	37.070	38.000	0.930	18,300	0	10	23	33	0.69
KY 813	9.300	9.677	0.377	340	0	2	1	3	1.07
KY 813	9.677	10.349	0.672	720	0	1	3	4	0.68
KY 813	10.349	11.300	0.951	3,320	0	2	9	11	0.51

Table 6. Vehicle Crash Spot Locations for Breathitt Parkway Exit 37

Route	Begin MP	End MP	ADT	Vehicle Crashes				Critical Rate Factor
				Fatal	Injury	PDO	Total	
EB PKWY	36.000	36.100	18,100	0	2	8	10	1.63
EB PKWY	36.670	36.770	18,100	0	1	5	6	0.98
EB PKWY	36.900	37.000	18,100	0	1	7	8	1.30
EB PKWY	37.000	37.100	18,100	0	6	17	23	3.74
EB PKWY	37.170	37.270	18,300	0	1	5	6	0.97
EB PKWY	37.600	37.700	18,300	0	2	4	6	0.97
KY 813	9.300	9.400	340	0	2	1	3	1.93
KY 813	10.249	10.349	720	0	0	4	4	1.89

To gain a better understanding of prevailing trends and probable causation factors, analysts divided the study area into three subsets: Breathitt Parkway north of the interchange, Breathitt Parkway south of the interchange, and KY 813. For crashes occurring within each of these three segments and within the high and potential high crash spots shown in Tables 5 and 6 above, data was investigated by severity, by year, and by type.

Crashes were divided into one of three severity categories: fatality, injury, or property damage only (PDO). Tracing the occurrence of incidents by year allowed analysts to determine how rates changed over the past four years and if crash rates are increasing. Type classifications (described below) suggest causation trends and provide valuable insight to mitigation strategies. The type classifications used to define cause include:

- Rear Ends – one car impacts the rear end of another which may be stopped or moving;
- Collisions with Objects – car impacts an external object but not another vehicle;
- Ramp – any type of crash specifically listed as occurring on a ramp;
- Turning – one car is making a turning movement to/from a perpendicular side road or entrance (this category was omitted for parkway analysis);
- Ran Off Road – any car leaving the driving lanes resulting in an incident; and
- Other – all other accident types.

Figures 5 and **6** present the results of this investigation by roadway section and high crash spot locations, respectively. Both sections of the Breathitt Parkway showed higher numbers of collisions, followed by run-off road crashes. This is likely due to the short acceleration and deceleration lanes where the ramps join the mainline. On KY 813, there is a fairly even split between crash types: collisions, rear end incidents, and angle collisions while turning.

Because of its close proximity to the truck stop access point, Spot B (located from the Breathitt Parkway overpass to the northbound ramp termini) was studied further to provide specific incident information for each crash. This information is shown in **Figure 7**.

A number of conclusions emerge from the crash analysis:

- There are six high crash spots identified along the Breathitt Parkway and three have a current CRF greater than the 1.0 threshold. The worst of these spots is located just north of the interior loop ramps with a CRF of 3.74; crashes are occurring at this location almost 4 times as often as on similar roadways in Kentucky. Trend analysis suggests the short tapers and adjacent bridge may be causing the elevated number of occurrences, reflected in the concentration of single vehicle collisions and related crash types.
- Lower volumes on KY 813 are accounted for in CRF calculations. Despite CRF values approaching 2, less than one crash per year occurred at the spots falling within the study area. Within spot B (immediately east of the parkway overpass), crashes appear to be linked to the concentration of access points in the vicinity.

These observations were used in the development of interchange alternatives, discussed in the following sections.

Figure 5. Crash Statistics by Section

Total Area Overview

Length: 4 miles
Total Crashes: 93
Injury Crashes: 24

By Year:	By Type:
2002 – 19	Rear End – 10
2003 – 27	Collision – 40
2004 – 23	Ramp – 4
2005 – 18	Turning – 3
2006* – 6	Ran Off Road – 19
	Other – 17

Section 1
KY 813
(MP 9.300 – 11.300)

Length: 2 Miles
Total Crashes: 17, 5 injury
ADT: 340 – 3,320
Direction: NE-10/SW-7

By Year:	By Type:
2002 – 5	Rear End – 3
2003 – 6	Collision – 5
2004 – 2	Ramp – 1
2005 – 4	Turning – 3
2006* – 0	Ran Off Road – 2
	Other – 3

Section 2
Breathitt Parkway
(MP 36.000– 37.070)

Length: 1.07 Miles
Total Crashes: 43, 9 injury
ADT: 18,100
Direction: N-22/S-20/W-1

By Year:	By Type:
2002 – 7	Rear End – 3
2003 – 11	Collision – 18
2004 – 12	Ramp – 2
2005 – 9	Ran Off Road – 9
2006* – 4	Other – 11

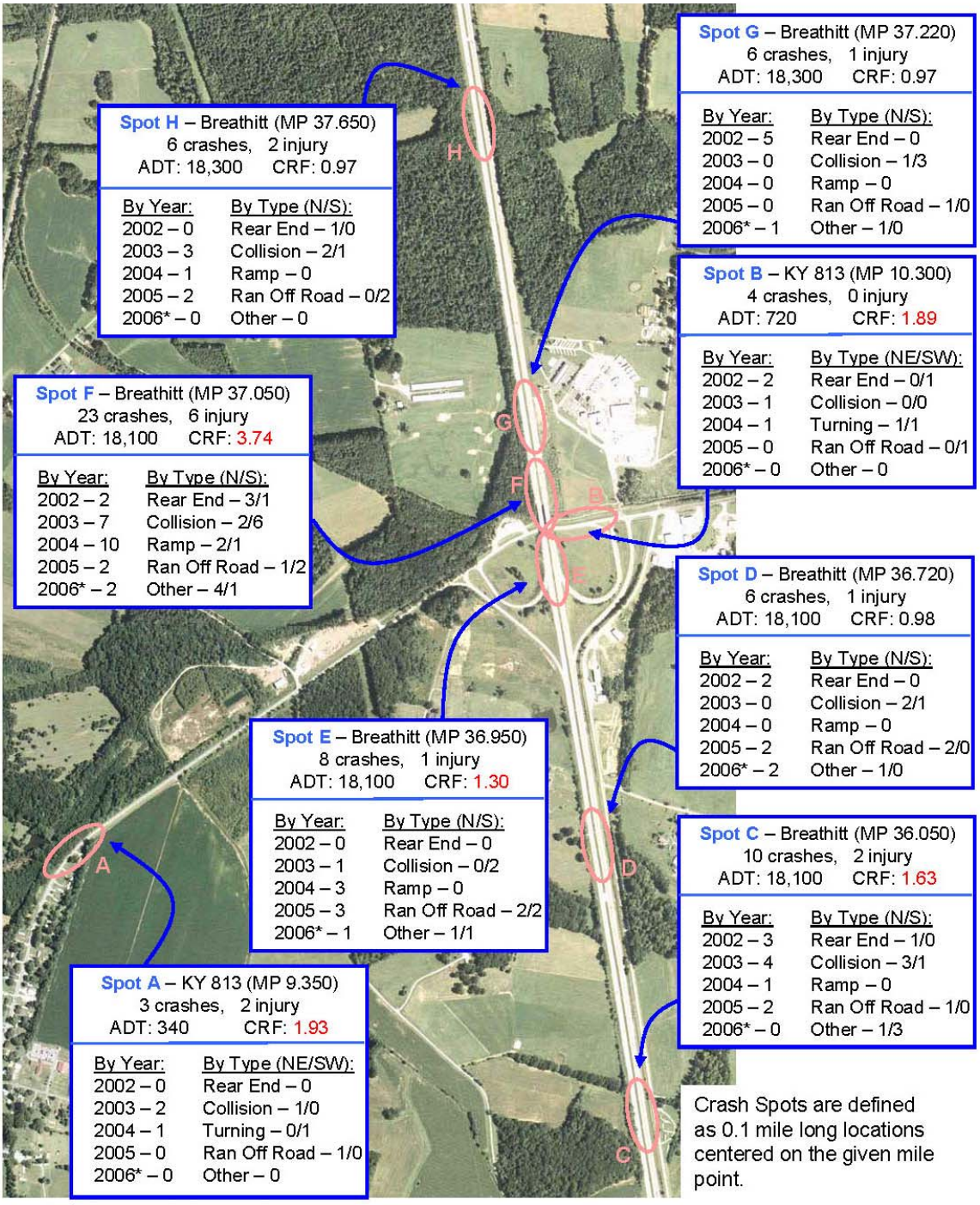
Section 3
Breathitt Parkway
(MP 37.070 – 38.000)

Length: 0.93 Miles
Total Crashes: 33, 10 injury
ADT: 18,300
Direction: N-17/S-16

By Year:	By Type:
2002 – 7	Rear End – 4
2003 – 10	Collision – 17
2004 – 9	Ramp – 1
2005 – 5	Ran Off Road – 8
2006* – 2	Other – 3

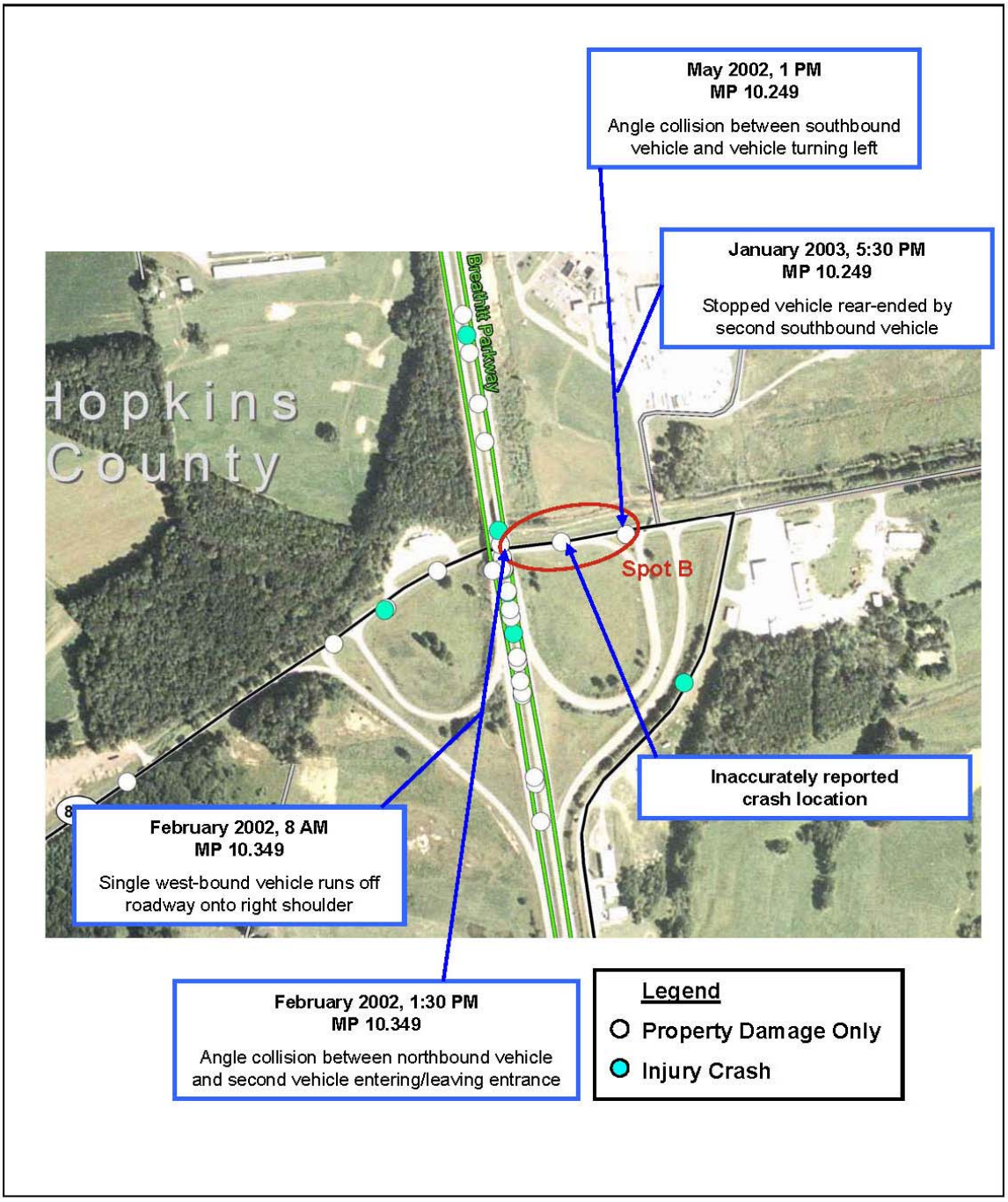
**2006 crashes reported Jan. - Apr.*

Figure 6. Crash Statistics by Spot



**2006 crashes reported Jan. – Apr.*

Figure 7. Spot B Crash Overview



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III. INITIAL CABINET, PUBLIC AND AGENCY INPUT

Public officials and local business representatives were given the opportunity to provide input throughout the course of the KY 813 Interchange Study. This chapter describes the first round of agency involvement that occurred early in the study process and describes the comments and input received as a result of those efforts. Activities undertaken as part of the second round of cabinet and agency involvement are summarized in **Chapter V**, as they relate to the development and evaluation of the improvement alternatives.

Public and Agency Involvement

- Project Team Meetings
- Local Officials/Stakeholders Meetings

A. Project Team Meeting (October 31, 2005)

The first Project Team Meeting was conducted on Monday, October 31, 2005, in Madisonville, Kentucky. The purpose of the meeting was to discuss the project history and purpose; scope of work and related activities; preliminary data/exhibits; project issues; and public involvement needs. Participants at the meeting included staff from the Pennyrile Area Development District (PADD), Kentucky Transportation Cabinet (KYTC) District 2, KYTC Central Office, and the project consultant, Wilbur Smith Associates (WSA). A copy of the meeting minutes is included in **Appendix B**. Items discussed by those present at the meeting included:

- The Project Team agreed the primary purpose of the project was to improve safety for motorists using the interchange. The Project Team also recommended that the improvement alternatives address operational improvements as well as flooding noted to occur along KY 813 at the termini of the southbound ramps.
- The northbound and southbound on-ramps were noted to have limited acceleration length. The northbound on-ramp is limited in length by the Breathitt Parkway bridge structure. The on-ramps are yield controlled and as a result, vehicles may be forced to slow down or stop prior to merging with mainline traffic.
- Southside Elementary, South Middle School and Hopkins County Central High School are in the Mortons Gap area. Buses travel KY 813, but currently do not use the Breathitt Parkway interchange as part of their daily routes.
- The recently completed purchase and remodeling of the truck stop by Pilot has the potential to generate additional traffic, including truck traffic.
- KY 813 at the southbound ramps has been known to flood and this would need to be addressed. In addition, if a typical diamond interchange were considered, the northeast and northwest interchange quadrants would need to be evaluated for their potential to flood. Temporary and seasonally flooded forested wetlands were identified in the northwest quadrant of the interchange.
- Through the statewide needs identification/prioritization process, this project has been identified as the top priority project for both Mortons Gap and Hopkins County, and it is one of the top ten project needs in the Pennyrile ADD region.
- There are three (3) to five (5) non-conforming billboards in the study area that may be impacted. Because they are non-conforming, they would not be able to be

relocated. As many as five (5) business relocations may be required if the interchange were reconstructed.

B. Local Officials Meeting - Round I (October 31, 2005)

As part of the public involvement portion of this study, a local officials meeting was held on Monday, October 31, 2005, in Madisonville, Kentucky. The purpose was to discuss the project history and purpose; scope of work and related activities; preliminary data/exhibits; project issues; and public involvement needs. The eight participants at the meeting included the Mortons Gap Mayor, Hopkins County Judge Executive, Hopkins County Joint Planning Commission staff, and staff from the Pennyrile Area Development District (PADD), Kentucky Transportation Cabinet (KYTC) District 2, KYTC Central Office, and the project consultant, Wilbur Smith Associates (WSA). A copy of the minutes from this meeting is included in **Appendix B**.

Some of the local issues identified were as follows:

- The Mortons Gap Mayor noted high school aged drivers travel to and from school along KY 813 with some using Exit 37. While no school bus routes use the interchange, the buses travel along KY 813 past the Breathitt Parkway. He was concerned over the interaction between these school related trips and the large number of trucks using the interchange to access the Pilot Truck Stop or Mortons Gap. He noted that, although there had been no school bus crashes at the interchange, there had been several near-misses.
- The Hopkins County Judge Executive was concerned that the number of trucks passing through the interchange may increase with the renovated truck stop.
- The southwest quadrant of the interchange is being promoted as potential commercial development property and includes approximately 30 to 40 acres.

IV. PROJECT PURPOSE AND NEED

As a result of the planning process and public involvement efforts, project goals were identified for the proposed reconstruction of the KY 813 interchange, based on a compilation of input from highway officials, local government agencies, interest groups, and the project team. These goals address accessibility, economic benefit, connectivity, and safety and operational conditions of the KY 813 interchange. These goals are reflected in the Purpose and Need for the proposed project to be used during future project development efforts, including design and environmental activities.

Following is a brief discussion of the Purpose and Need for the proposed KY 813 Interchange project:

- **Improved ramp and roadway geometrics would help alleviate concerns about safety at the Breathitt Parkway and KY 813 interchange raised by the public and shown in data analysis.**

  Local officials have expressed concerns about safety at the Breathitt Parkway/KY 813 Interchange, particularly for school related trips. In addition to trips generated by students and parents traveling to and from three area schools, three bus routes travel along KY 813 through the study area. Truck percents along the ramps range between 23 percent and 50 percent. With a higher than average percentage of trucks using the interchange, local officials noted concern over the interaction between school related trips and truck traffic.

  Based on the latest AASHTO standards (*A Policy on Design Standards Interstate System* – adopted into the Federal Register in June 2005), the length of the acceleration and deceleration lanes for the KY 813 interchange are deficient. Crash analysis at the interchange showed two (2) high crash spot locations at the northbound on-ramp and southbound off-ramp. It is reasonable to conclude some of these crashes are related to the acceleration and deceleration deficiencies. Based on the current configuration of the interchange and the bridge width, the northbound on-ramp cannot be extended without widening or replacing the current structure.

- **Reconstruction of the KY 813 interchange would provide the opportunity to improve an undesirable interchange configuration.**

  When the KY 813 interchange was constructed in the early 1960's, a rail line was located to the north of KY 813. As a result, the Breathitt Parkway overpass bridge was built to span both KY 813 and the rail line and a flopped diamond interchange was constructed in order to minimize impact to the rail line. The rail line has since been removed, creating the opportunity to consider additional interchange configurations and reconstruct a shorter span bridge when the functional life of the existing bridge is surpassed.

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V. ALTERNATIVES EVALUATION PROCESS

Following the existing conditions review and first round of consultation with local officials, three (3) potential improvement alternatives were developed for the KY 813 interchange. These were based on an analysis of existing conditions and on input received from early discussions with local officials and staff.

An evaluation process was undertaken to determine a recommended alternative. Initially, three (3) alternatives were developed, and these were evaluated as part of a screening process. Findings were presented to the project team, local officials and key stakeholders and they were given the opportunity to react to the proposed improvement alternatives. The result of these meetings was the recommendation of a preferred build alternative.

A. Proposed Improvement Alternatives

As presented in **Appendix C**, three (3) build alternatives were developed. The alternatives are described as follows:

- Alternative 1: The primary goal of this alternative is to improve the deficient acceleration and deceleration lanes. The flopped diamond interchange configuration would be maintained, but acceleration and deceleration lengths would be increased to current standards. In order to accommodate these improvements, the existing bridge structures would need to be widened or replaced. Each existing ramp and the Breathitt Parkway within the study limits would be given a pavement overlay.

  KY 813, adjacent to the Breathitt Parkway northbound off-ramp, may need to be relocated to accommodate extension of the deceleration lane. The ramp reconstruction will result in the adjacent ditch moving to the east, potentially outside existing right-of-way. With the close proximity of KY 813 to the Breathitt Parkway, a shift to the east may result in KY 813 needing to be shifted as well, increasing overall project costs. Depending on how far KY 813 must shift, one (1) business owner and buildings associated with this business may be impacted further increasing right-of-way .

- Alternative 2: The primary goal of this alternative is to convert the flopped diamond configuration to a diamond interchange, while minimizing impacts to existing businesses in the eastern quadrants. To accomplish this goal, the diamond interchange is offset to the west. This allows the interchange to be greater than 300 feet from the Pilot Truck Stop entrance and still maintain the minimum ramp spacing of 1200 feet. Similar impacts to Alternative 1 on KY 813 adjacent to the northbound off-ramp are anticipated. This would be analyzed in more detail in future phases to determine specific impacts, if any.

  KY 813 would be reconstructed as a three-lane section within the interchange improvement project limits; typical sections are shown in **Figure 8,** shown in Section VI of this report. One (1) business would need to be relocated in the northwest quadrant because it would fall within the ramp right-of-way. No improvements to the existing Breathitt Parkway structures would be required. The existing bridge piers would accommodate the proposed typical section, with a minor reduction in shoulder width. The shoulder width would still exceed minimum standards.

- Alternative 3: The primary goal of this alternative is to convert the flopped diamond configuration to a diamond interchange and maintain ideal spacing between state routes, ramps and parkway. While similar to Alternative 2, this alternative would

cause the existing Pilot Truck Stop entrance to be relocated to the east in order to maintain the required 300-foot spacing. The realigned entrance would be aligned with KY 813 where KY 813 changes from an east-west segment to a north-south segment.

Additional realignment of KY 813 is anticipated and would impact one (1) to two (2) additional businesses, depending on final design. Similar to Alternative 1, a shift in the right-of-way limits for the ramps will cause KY 813 to also need to shift to the east because of their close proximity. KY 813 would be reconstructed as a three-lane section within the interchange improvement project limits. As with Alternative 2, no improvements to the existing Breathitt Parkway structures would be required.

B. Evaluation of the Build Alternatives

The three (3) build alternatives were evaluated based on the project purpose and need, construction costs, long-term economic costs, wetland impacts, traffic and safety considerations, stakeholder input, and compatibility with the I-69 corridor.

Each alternative would provide the opportunity to extend the acceleration and deceleration lanes. In order for this to be accomplished for Alternative 1, the existing Breathitt Parkway bridges would need to be widened or replaced. In Alternatives 2 and 3, all four (4) ramps would be rebuilt to accomplish this project purpose. Alternatives 2 and 3 would provide the opportunity to improve an undesirable interchange configuration by converting the flopped diamond to a diamond interchange type. Alternative 1 would maintain the flopped diamond configuration.

Preliminary cost estimates were developed based on the conceptual design presented in Appendix B and field observation. The preliminary cost estimates are presented in **Table 7**.

Table 7. Build Alternatives – Preliminary Cost Estimates

	Alternative 1	Alternative 2	Alternative 3
Roadway Cost	$ 1,760,000	$ 4,120,000	$ 4,580,000
Structures Cost	$ 2,000,000	$ 400,000	$ 600,000
Utility Cost	$ 225,000	$ 600,000	$ 600,000
Right of Way Cost	$ 400,000	$ 1,000,000	$ 850,000
Total Cost	$ 4,385,000	$ 6,120,000	$ 6,630,000
Right-of-Way Acquisition (acres)	5	36	34
Wetlands Encroachment (acres)	0	2	1
Relocations (# of properties)	1	2	3

As shown in Table 7, Alternative 1 is the least expensive in terms of construction costs (including roadway and structures) at approximately $3.8 million, while Alternative 3 is the most expensive at approximately $5.2 million. The largest cost for Alternative 1 is the widening of the Breathitt Parkway bridges over KY 813 ($2 million). As identified in Section II, the bridge is not structurally deficient or functionally obsolete. If the bridge were widened as part of the Alternative 1 implementation, a significant investment would be put into a bridge facility without necessarily extending the life expectancy of the bridge. If the bridge were replaced, it would be prematurely replaced without reaching its full life expectancy. While a detailed cost-benefit analysis has not been completed as part of this project, it is anticipated that Alternatives 2 and 3 would provide greater long-term economic advantage over Alternative 1 because of these reasons. Alternatives 2 and 3 would allow the bridges to be replaced given their current life expectancy schedule (not as part of this improvement project) and, otherwise, provide a new interchange facility.

Alternative 1 would address the safety concerns associated with the shorter acceleration and deceleration lengths; however, it would not address the potential for wrong-way entries known to occur more frequently on flopped diamond interchanges. While meeting interstate standards, the flopped diamond interchange is not a preferred interchange configuration; therefore, Alternative 1 would be considered less compatible with the future I-69 corridor when compared to Alternatives 2 and 3.

Alternative 3 would provide the greatest safety benefit. The reconfiguration of the Pilot Truck Stop would allow entrances and roadways to be consolidated creating traditional four-leg intersections. Truck turning radii would be improved at each of the new intersections and turn lanes would be provided, as needed, improving both safety and capacity.

Alternative 2 would provide similar benefits to Alternative 3 with a couple of exceptions. Because the northbound ramps are closer to the Breathitt Parkway bridge structure in Alternative 2, sight distance may not be as favorable. In addition, the Pilot Truck Stop entrance would not be relocated with Alternative 2, creating offset intersections. While spacing between intersections is increased in Alternative 2 over the existing condition, safety and capacity may be reduced when compared to Alternative 3.

Alternative 1 would have the least impact to the surrounding environment because of its smaller footprint. As shown in Table 7, minimum impacts to surrounding businesses and to wetlands are anticipated. These and other environmental features should be investigated in more detail as part of the Phase 1 Design (Preliminary Engineering and Environmental) Phase. Impacts to wetlands and business relocations are anticipated with both Alternatives 2 and 3.

C. No-Build Alternative

In addition to the three (3) build alternatives, the No-Build Alternative was evaluated relative to the Purpose and Need. The No-Build Alternative would not correct existing acceleration and deceleration deficiencies for the Breathitt Parkway ramps. In addition, it would not create the opportunity to correct an undesirable interchange configuration (the flopped diamond). However, given the current lack of funding for the project and the lower utilization of the interchange when compared to others along the Breathitt and Ford Parkways, the No-Build Alternative should continue to be carried forward through the planning process as a viable alternative in addition to the build alternatives.

D. Local Officials Meeting - Round II (November 2, 2006)

As part of the alternatives evaluation, a meeting was held on Thursday, November 2, 2006, with local officials and potential stakeholders at the Mortons Gap Town Hall in Mortons Gap, Kentucky. The purpose was to discuss the project history, existing conditions, and interchange concepts. The local officials reviewed the alternatives and showed general support for the proposed alternatives. No consensus support for one alternative over another was provided by the local officials and stakeholders present at the meeting. The meeting minutes are included in **Appendix B**.

Some of the comments and local issues identified were as follows:

- A representative from Pilot noted that volumes at the Pilot Truck Stop have doubled in the past 15 months and are expected to continue to grow, particularly when dedicated fleet sales go into effect in March/April 2007.
- Officials were concerned about the compatibility of the existing interchange with the proposed I-69 corridor. It was pointed out that the existing interchange does not fully comply with I-69 standards.
- A question was raised concerning project phasing. If the full interchange could not be built at once, it could be constructed as a single ramp or ramp pairs.
- The Mortons Gap Mayor asked how the KY 813 interchange project would compare to other projects relative to priority and need. In response, it was noted that the KY 813 interchange may not be considered the highest priority project along the I-69 corridor, but having the project studied and quantified will help attract attention and potentially funding for the project. It was noted that the I-69 Study being conducted concurrent to this project will help set priorities along the corridor.
- Eyewitness accounts by those present supported the potential for wrong way entry at the flopped diamond interchange.

E. Final Project Team Meeting (November 2, 2006)

The Final KYTC Project Team Meeting was held on Thursday, November 2, 2006, in Madisonville, Kentucky. The purpose was to discuss the project history, review the existing conditions, discuss interchange concepts, and analyze interchange concepts. A copy of the minutes for this meeting is included in **Appendix B**.

The proposed build alternatives and analysis were presented to the Project Team for review and discussion. The following special considerations were discussed in varying levels of detail:

- For Alternative 1, the bridge cost for widening the structure versus replacing the structure was approximately the same.
- The property adjacent to the Pilot Truck Stop had been previously identified for commercial development, but based on an investigation completed by PADD, the property would probably not be suitable for development because of flooding problems.
- Wetlands would have to be further evaluated, but initial investigation shows Alternatives 2 and 3 would have wetland impacts. It was noted that on a recent transportation project in the area, the wetlands requirement for impacts was replacement at a rate of two (2) to one (1).

- Understanding the northbound on-ramp created the greatest concern, a question was raised regarding just fixing this ramp. Alternative 1 was suggested as one solution. Another option would be to only build a portion of Alternative 2 or 3. It was noted that one drawback to this solution was the timing of the environmental and design process. If the remainder of the interchange was constructed at a later time, the environmental investigation may have to be redone. Development and changes in land use could also complicate the ultimate completion of the interchange if built in multiple stages.

At the conclusion of the meeting, Alternative 3 was recommended as the preferred build alternative. However, Alternative 2 could be considered, particularly if a phased approach was required. It was agreed that Alternative 1 was not as cost effective over the long-term and not fully compatible with proposed I-69 improvements.

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VI. CONCLUSIONS AND RECOMMENDATIONS

This chapter provides conclusions and recommendations for improvements to the KY 813 interchange (Exit 37) along the Breathitt Parkway. The recommendations made in this chapter are the result of the Alternatives Study process for the KY 813 Interchange project.

A. Project Purpose and Need

The purpose and need, discussed in detail in the Chapter IV for the proposed KY 813 Interchange improvements are as follows:

- Improved ramp and roadway geometrics would help alleviate concerns about safety at the Breathitt Parkway and KY 813 interchange raised by the public and shown in the data analysis.
- Reconstruction of the KY 813 interchange would provide the opportunity to improve an undesirable interchange configuration.

B. Preferred Alternative

Alternative 3 was selected as the preferred alternative. The Project Team determined that Alternative 3 was more cost effective over the long-term and was the most compatible with future I-69 improvements. Alternative 3 would improve acceleration and deceleration lengths shown to be a contributor to high crash spots. Improvements to KY 813 would create turn lanes for movements to and from the Parkway. Additionally, the interchange would be reconstructed to remove the undesirable flopped diamond and replace this configuration with the preferred diamond configuration. This decreases the potential for wrong way entry accidents often attributed to flopped diamond interchanges. Finally, the intersection of KY 813 and the Pilot Truck Stop entrance would be realigned to create a more traditional intersection, which should better accommodate truck movements in and out of the truck stop facility, remove potentially confusing movements, and decrease the number of conflict points along KY 813.

Alternative 2 could be considered if right-of-way concerns develop in the two (2) eastern quadrants. Alternative 2 could also be considered if a phased approach such as building only Ramp A was considered more appropriate. It accomplishes many of the same improvements as Alternative 3; however, Alternative 2 would result in poorer sight distance along KY 813 as compared to Alternative 3 and would not improve the Pilot Truck Stop entrance.

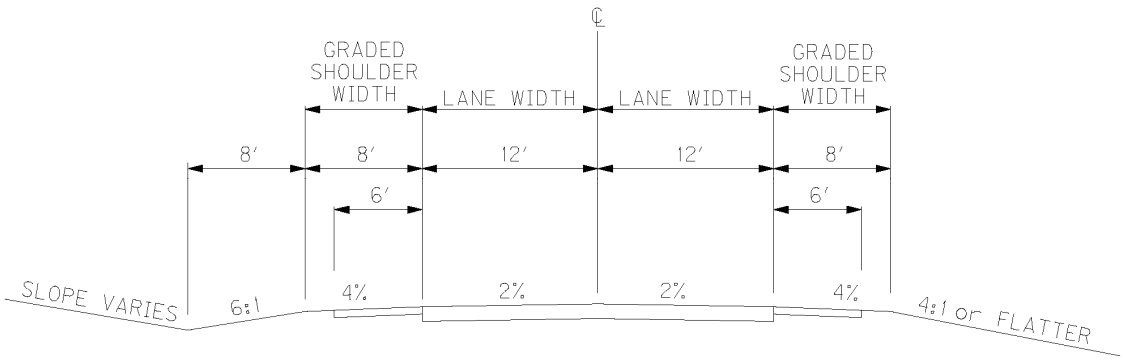
C. Potential Design Criteria and Considerations

Potential design criteria and considerations for the proposed KY 813 interchange are noted here for planning purposes only. Typical section, access control considerations, and multimodal and environmental considerations are addressed. These criteria are general recommendations based upon the information gathered through this planning phase of study. Specific geometric parameters should be defined during future design phases of the project when more detailed information is available.

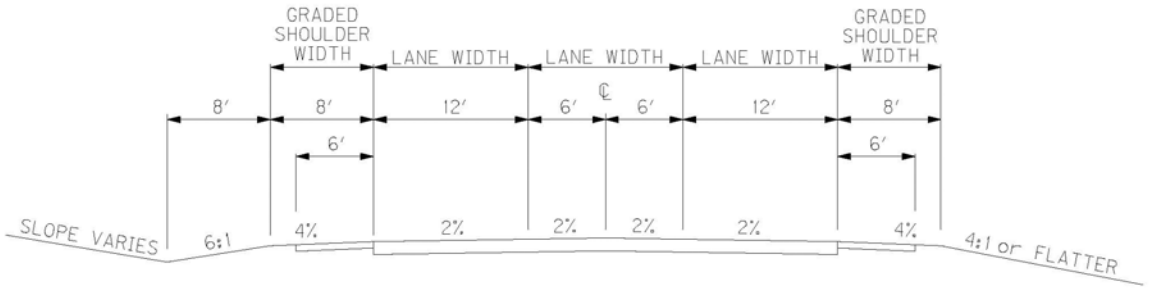
1. Typical Section

The proposed typical sections for KY 813 and the Breathitt Parkway ramps are shown in **Figure 8**.

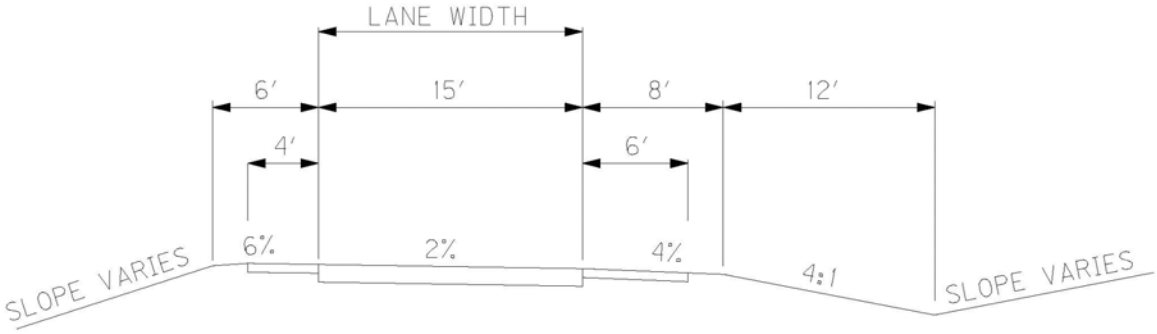
Figure 8. Typical Sections



KY 813 (2 LANE)
TYPICAL SECTION



KY 813 (3 LANE)
TYPICAL SECTION



RAMP TYPICAL SECTION

This will likely include for KY 813:

- Two (2) or three (3) 12-foot lanes depending on location;
- Usable shoulder widths of 8 feet; and
- A design speed of 55 miles per hour.

For the Breathitt Parkway interchange ramps, this will likely include:

- One (1) 15-foot lane;
- Usable shoulder widths of 8 feet outside and 6 feet inside;
- Appropriate acceleration and deceleration lengths at the interface with the Parkway; and
- Appropriate storage and turning roadways between ramp termini and KY 813.

2. Access Control Recommendations

Full control of access should be maintained 300 feet beyond the ramp termini, which is standard for rural roadways such as KY 813. Access control should be maintained regardless of interchange type.

3. Multimodal Considerations

Two key issues related to multimodal and intermodal transportation were identified through the course of this study and should be considered as this project moves into future phases.

- Since the purchase of the truck stop facility by Pilot in 2005, volume has doubled and growth at the facility is expected to continue due to dedicated fleet sales. Consideration should be given to truck movements on and off the Breathitt Parkway and into and out of the Pilot Truck Stop.
- No special bicycle/pedestrian facilities were identified as being needed at this time along KY 813; however, the shoulders could be used for bicycles on KY 813. Bicycle/pedestrian accommodations should be considered in accordance with KYTC policy during the next phases of project development.

4. Environmental Considerations

While a comprehensive environmental assessment has not been completed, a preliminary review revealed potential impacts to wetlands. This will need to be further investigated and potentially mitigated in future phases of this project.

D. Phase Costs

The estimated total cost for Alternative 3 is $7,020,000. Cost estimates for each project development phase are summarized below:

- Design – $390,000
- Right-of-Way – $850,000
- Utilities – $600,000
- Construction – $5,180,000

E. Next Steps

Currently the KY 813 Interchange project is not programmed in the Kentucky Enacted Six-Year Highway Plan FY 2007-2012. The next step would be to establish programming for future project phases. The next phase would be Phase 1 Design (Preliminary Engineering and Environmental).

Based on the preliminary project review, environmental impacts are anticipated to be minimal; therefore, a Categorical Exclusion Environmental Report would, most likely, meet National Environmental Policy Act (NEPA) requirements. Following Phase 1 Design and Environmental, Phase 2 Design would need to be completed, followed by the right-of-way, utilities, and construction phases.

VII. ACKNOWLEDGEMENTS AND CONTACTS

A number of individuals are responsible for the successful completion of this study. This study would not have been possible without the time, effort, and knowledge of the following individuals:

- For contributions to this project, thanks go to Kevin McClearn, Nick Hall, Everett Green, and the other KYTC District 2 staff members who assisted with this effort.
- Thanks also to Craig Morris with the Pennyrile Area Development District for assistance throughout the project.

Additional information regarding the KY 813 Interchange Study can be obtained from the following KYTC Division of Planning staff members:

- Daryl J. Greer, P.E., Director
- Jimmy C. Wilson, P.E., Project Manager

The following address and phone numbers can be used to reach these individuals:

Division of Planning
Kentucky Transportation Cabinet
Station: W5-05-01
200 Mero Street
Frankfort, KY 40622
Phone: (502) 564-7183
FAX: (502) 564-2865

APPENDIX A.

PHOTOGRAPHS OF PROJECT AREA

Northeast quadrant looking south toward KY 813

Northeast quadrant looking north toward Breathitt Parkway

Pilot Truck Stop in northeast quadrant

Breathitt Parkway southbound on-ramp

Breathitt Parkway bridge from KY 813 northbound on-ramp

Breathitt Parkway bridge from KY 813 looking west

Breathitt Parkway bridge from KY 813 looking east

Breathitt Parkway bridge from KY 813 looking east

Breathitt Parkway northbound approaching Exit 37

Breathitt Parkway southbound bridge

Breathitt Parkway northbound bridge

Breathitt Parkway southbound exit ramp

APPENDIX B.

MEETING MINUTES

MINUTES

Project Team Meeting

KY 813 Interchange Study

Hopkins County

KYTC District 2 Office
Madisonville, Kentucky
October 31, 2005 – 10:00 a.m. CST

A project team meeting for the KY 813 Interchange Study in Hopkins County was conducted on Monday, October 31, 2005, in Madisonville, Kentucky. The purpose was to discuss the project history and purpose; scope of work and related activities; preliminary data/exhibits; project issues; and public involvement needs. Participants at the meeting included staff from the Pennyrile Area Development District (PADD), Kentucky Transportation Cabinet (KYTC) District 2, KYTC Central Office, and the project consultant, Wilbur Smith Associates (WSA). A meeting agenda is attached. Meeting attendees included the following:

Craig Morris	Pennyrile ADD
Kevin McClearn	KYTC District 2, TEBM – Planning
Everett Green	KYTC District 2, TEBM – Pre-Construction
Kenny Potts	KYTC District 2, TEBM – Traffic
C.D. Palmer	KYTC District 2, Environmental Coordinator
David McDowell	KYTC District 2, Acting TEBM – Construction
Christopher Ward	KYTC District 2, Utilities
Phillip Whitmer	KYTC District 2, Right-of-Way
Nick Hall	KYTC District 2, Planning
Jim Wilson	KYTC Central Office, Planning
Carl D. Dixon	Wilbur Smith Associates
Brad Johnson	Wilbur Smith Associates

Following is a summary of the key comments and discussion items for this meeting provided in order of the meeting agenda.

1) Welcome and Introductions

Kevin McClearn began the meeting with a statement of welcome. He then introduced everyone in attendance. Attendees are listed above.

2) Project History

Kevin explained to the project team that the driving force for the project were concerns related to the northbound on-ramp; however, it was recommended that this project also evaluate upgrading the entire interchange to I-69 standards.

3) Scope of Work

Carl Dixon briefly reviewed the Scope of Work for Wilbur Smith Associates. Tasks for this study include: data collection and analysis; additional meetings with local officials and the project team; identification of the purpose and need for the project; and development and analysis of three (3) potential improvements alternatives.

Brad Johnson reviewed meeting handouts provided to attendees. The information presented was a summary from the I-69 Corridor Planning Study. Included in the handout were the following figures: Vehicle High Crash Segments and Vehicle Crash Information, Traffic Volume and LOS (Base Year), and Traffic Volume and LOS with I-69/I-66 Projects (Year 2030). Also included was a one-page summary of this information. Brad explained to attendees that all this information would be updated as part of this study. He also mentioned that the District office would be conducting vehicle classification counts and turning movement counts at the KY 813 interchange.

a) Project Purpose and Need

The project team agreed that the primary purpose of the project was to improve safety for motorists using the interchange. The KY 813 interchange provides access to three (3) schools in the Mortons Gap area; therefore, several buses and teenage drivers use the interchange on a daily basis. Project team members also recommended improvement alternatives address the need for operational improvements and flooding noted to occur along KY 813 at the termini of the southbound ramps.

b) Project Issues

Potential project issues discussed at the meeting included the following:

- The northbound on-ramp and southbound on-ramp both have limited acceleration length. The northbound on-ramp is limited by the Breathitt Parkway overpass. This impacts vehicles ability to merge adequately with mainline traffic.
- Southside Elementary, South Middle and Hopkins County Central High School are in the Mortons Gap area. Several buses and younger drivers use the interchange to access these schools. The bus garage is also in the area.
- Pilot recently purchased the Iron Kettle Restaurant and truck stop and is currently remodeling the entire facility. It is scheduled to reopen November 22, 2005. This facility has the potential to generate additional traffic, including truck traffic.
- Bus and truck traffic add to safety concerns because of the limited length of the acceleration lanes. Buses and trucks are unable to achieve mainline speeds prior to the merge point. In addition, the on-ramps are yield controlled. As a result, vehicles may be forced to slow down or stop prior to merging with mainline traffic.
- No one on the project team was aware of a truck having turned over as a result of the tight turning radius for the northbound on-ramp and southbound off-ramp.

- The southbound ramps termini at KY 813 have been known to flood and this would need to be addressed. In addition, if a typical diamond interchange were considered, the northeast and northwest interchange quadrants would need to be evaluated for their potential to flood.
- Temporary and seasonally flooded forested wetlands were identified in the northwest quadrant of the interchange.
- Through the statewide needs identification/prioritization process, this project has been identified as the #1 project for both Mortons Gap and Hopkins County, and it is one of the top 10 project needs in the Pennyrile ADD region.
- There are three (3) to five (5) non-conforming billboards in the study area that may be impacted. Because they are non-conforming, they would not be able to be relocated.
- As many as five (5) business relocations may be required if the interchange were reconstructed.
- There are no intermodal transportation issues; however, due to the truck traffic using the truck stop, there are freight transportation considerations.
- There are no bicycle or pedestrian issues anticipated as part of this project.
- ITS is not considered a viable alternative for the identified problem.

c) Project Termini

Project termini should extend at least 300 feet from the interchange in each direction. In order to address flooding, the roadway and bridge may need to be raised. This may cause the Breathitt Parkway termini to extend further in each direction to accommodate additional length for the improvement. It was noted that traffic on KY 813 south of the interchange is low.

4) Public Involvement

Carl Dixon noted that some members of the project team were scheduled to meet with local officials later in the afternoon to participate in a similar discussion. He noted that a second project team meeting and local officials meeting would be held later in the process. At this time, no public meetings were anticipated to be held as part of this project. If further funding were secured, then public meetings may take place at that time.

It was recommended by members of the project team that representatives of the Best Western hotel and Pilot truck stop be contacted. It was also suggested to contact the Kentucky Geotechnical Branch to determine if any of the study area had been strip mined.

5) Questions and Answers

No further questions were raised.

6) Adjourn

With no further comments or questions, the meeting adjourned at around 11:00 p.m.

AGENDA
Project Team Meeting

KY 813 Interchange Study

October 31, 2005
10:00 a.m. CDT
District 2 Office, Madisonville, Kentucky

1) **Welcome**

2) **Introductions**

3) **Project History**

4) **Scope of Work**
   a) **Define the Project Purpose and Need**
   b) **Identify the Project Issues**
   c) **Define the Project Termini**

5) **Public Involvement**
   a) **Afternoon Local Officials Meeting**
   b) **Second Round of Meetings**
   c) **Other**

6) **Questions and Answers**

7) **Adjourn**

MINUTES

Local Officials Meeting

KY 813 Interchange Study

Hopkins County

Hopkins County Government Center
Madisonville, Kentucky
October 31, 2005 – 1:30 p.m. CST

A Local Officials Meeting for the KY 813 Interchange Study in Hopkins County was conducted on Monday, October 31, 2005, in Madisonville, Kentucky. The purpose was to discuss the project history and purpose; scope of work and related activities; preliminary data/exhibits; project issues; and public involvement needs. Participants at the meeting included the Mortons Gap Mayor, Hopkins County Judge Executive, Hopkins County Joint Planning Commission, and staff from the Pennyrile Area Development District (PADD), Kentucky Transportation Cabinet (KYTC) District 2, KYTC Central Office, and the project consultant, Wilbur Smith Associates (WSA). A meeting agenda is attached. Meeting attendees included the following:

Judge Patricia Hawkins	County Judge-Executive, Hopkins County
Mayor Frank Stafford	Mayor, Mortons Gap
Derek (Ted) Adkins	Hopkins County Joint Planning Commission
Craig Morris	Pennyrile ADD
Kevin McClearn	KYTC District 2, TEBM – Planning
Jim Wilson	KYTC Central Office, Planning
Carl D. Dixon	Wilbur Smith Associates
Brad Johnson	Wilbur Smith Associates

Following is a summary of the key comments and discussion items for this meeting, provided in order of the meeting agenda.

1) Welcome and Introductions

Kevin McClearn began the meeting with a statement of welcome. He then introduced everyone in attendance. Attendees are listed above.

2) Project History

Kevin explained to the project team that the driving force for the project were concerns related to the northbound on-ramp; however, it was recommended that this project also evaluate upgrading the entire interchange to I-69 standards.

Jimmy Wilson explained briefly the status of the I-69 Corridor Planning Study. He stated this project is a sub-task of the I-69 Study, but would be managed on its own schedule and budget.

3) Scope of Work

Carl Dixon briefly reviewed the Scope of Work for Wilbur Smith Associates. Tasks for this study include: data collection and analysis; additional public involvement with local officials and the project team; identification of the purpose and need for the project; and development and analysis of three (3) potential improvements alternatives.

Brad Johnson reviewed meeting handouts provided to attendees. The information presented was a summary from the I-69 Corridor Planning Study. Included in the handout were the following figures: Vehicle High Crash Segments and Vehicle Crash Information, Traffic Volume and LOS (Base Year), and Traffic Volume and LOS with I-69/I-66 Projects (Year 2030). Also included was a one-page summary of this information. Brad explained to attendees that all this information would be updated as part of this study. He also mentioned that the District office would be conducting vehicle classification counts and turning movement counts at the KY 813 interchange.

a) Project Purpose and Need

Mayor Stafford stated the primary purpose of the project was to improve safety for motorists using the interchange, particularly school related trips. The KY 813 interchange provides access to three (3) schools in the Mortons Gap area; therefore, several buses and teenage drivers use the interchange on a daily basis.

b) Project Issues

Potential project issues discussed at the meeting included the following:

- Mayor Stafford noted that five (5) or six (6) buses likely use the interchange on a daily basis. He also noted high school aged drivers use the interchange. He was concerned over the interaction between these school related trips and the large number of trucks using the interchange to access the truck stop or Mortons Gap. He noted that, although there had been no school bus accidents at the interchange, there had been several near-misses.
- Judge Hawkins was concerned that the number of trucks passing through the interchange may increase with the renovated truck stop. The Best Western hotel is also considering building a restaurant, which would likely increase the number of trips to its development.
- The undeveloped property in front of the truck stop adjacent to KY 813 and the Breathitt Parkway is owned by Pilot.
- It was noted that the Pilot truck stop is not within the city limits of Mortons Gap. It is adjacent to the property and there is interest in annexing it.
- The southwest quadrant of the interchange is being promoted as potential commercial development property and includes approximately 30 to 40 acres.

c) Project Termini

Carl Dixon noted the project termini should extend at least 300 feet from the interchange in each direction. In order to address flooding, the roadway and bridge may need to be raised. This may cause the Breathitt Parkway termini to extend further in each direction to accommodate additional length for the improvement. This information had been discussed at the earlier Project Team Meeting.

4) Public Involvement

Carl Dixon noted that a second project team meeting and local officials meeting would be held later in the process. He stated at this time, no public meetings were anticipated to be held as part of this project. If further funding were secured, then public meetings may take place at that time.

It was recommended that the project team contact Mr. Pat Courtney regarding school bus routing as it relates to the KY 813 interchange.

5) Questions and Answers

One question was raised concerning using I-69 funding sources for this project. It was noted that I-69 funding is divided among several participating states. The KY 813 project could be included in the overall I-69 priority funding, but, at this time, it is unclear how these funds will be prioritized and distributed.

6) Adjourn

With no further comments or questions, the meeting was adjourned at around 2:10 p.m.

AGENDA
Local Officials Meeting

KY 813 Interchange Study

October 31, 2005
1:30 a.m. CDT
Government Center Building, Madisonville, Kentucky

1) **Welcome**

2) **Introductions**

3) **Project History**

4) **Scope of Work**
   a) **Define the Project Purpose and Need**
   b) **Identify the Project Issues**
   c) **Define the Project Termini**

5) **Public Involvement**

6) **Questions and Answers**

7) **Adjourn**

MINUTES

Local Officials Meeting

KY 813 Interchange Study

Hopkins County

Mortons Gap Town Hall
Mortons Gap, Kentucky
November 2, 2006 – 1:30 p.m. CST

A Local Officials Meeting for the KY 813 Interchange Study in Hopkins County was conducted on Thursday, November 2, 2006, in Mortons Gap, Kentucky. The purpose was to discuss the project history, existing conditions, discuss interchange concepts, and analyze interchange concepts. A meeting agenda is attached. Meeting attendees included the following:

Mayor Frank Stafford	Mayor, Mortons Gap
Tim Thomas	Hopkins County Joint Planning Commission
Ted Adkins	Hopkins County Joint Planning Commission
Patrick Courtney	Hopkins County Schools
Brian Fox	Pilot General Manager
Craig Morris	Pennyrile ADD
Kevin McClearn	KYTC District 2, TEBM – Planning
Nick Hall	KYTC District 2, Planning
Jim Wilson	KYTC Central Office, Planning
Bill Gulick	Wilbur Smith Associates
Brad Johnson	Wilbur Smith Associates
Len Harper	Wilbur Smith Associates

Following is a summary of the key comments and discussion items for this meeting, provided in order of the meeting agenda.

1/2) Welcome and Introductions

Kevin McClearn began the meeting with a statement of welcome. He then introduced everyone in attendance. Attendees are listed above.

3) Project History and Status Update

Kevin stated that the primary purpose of the project was to improve the safety of the interchange, specifically the northbound on-ramp. He pointed out that no additional funding for the project exists beyond this study. He noted the results of this study would be a stand-alone document that could be used to seek additional funds.

4) Data Analysis

Brad Johnson described the crash analysis and traffic information presented in the meeting handouts.

a) Crash Analysis

Three figures related to the crash analysis were included in the handouts: Accident Statistics by Segment, Accident Statistics by Spots, and Spot B Accident Overview. Mayor Stafford noted safety related to the schools was a concern. Mr. Gulick noted that crashes along the mainline, while not on the bridge or at the ramps, can still be related to the acceleration and deceleration associated with the ramp movements.

b) Traffic and Operations

Turning movement counts, average daily volumes, and percent trucks were presented on the Traffic Volumes figure and described by Mr. Johnson. Mr. Fox noted that volumes at the Pilot truck stop continue to increase and have doubled in 15 months. He further stated that around March/April 2007, dedicated fleet sales will go into effect for the facility and will, most likely, result in additional truck traffic. This should be taken into consideration when evaluating future traffic volumes. Mr. Johnson suggested conducting additional capacity analysis for the interchange to determine excess capacity given current conditions.

5) Interchange Concepts

Three interchange concepts were presented in the handout materials and presented by Mr. Gulick.

a) Alternative 1

Mr. Gulick noted that it was concluded that the acceleration and deceleration lengths were the primary problem. Based on this problem, Alternative 1 was designed to address only this issue by improving all four ramp tapers. This would be considered the minimal approach to correct the interchange deficiencies.

b) Alternative 2

Alternative 2 is a diamond configuration offset to the west to avoid impacts to the Pilot truck stop. Responding to a question, Mr. Gulick noted that Ramp C (the southbound on-ramp) is slightly offset from the existing ramp. This is because of maintenance of traffic considerations. Responding to a second question, Mr. Gulick noted that the bridge had been rehabbed and was considered acceptable, not ideal, for an interstate facility. This alternative wouldn't require any work to be completed on the bridge.

c) Alternative 3

Mr. Gulick noted that Alternative 3 is considered closer to the ideal diamond interchange design. He noted that the Pilot truck stop entrance would need to be relocated to align opposite the KY 813 southern leg. He noted the minimum distance between intersections and on/off ramps is 300 feet.

6) Analysis of Interchange Concepts Including Cost Estimates

Mr. Gulick described the construction cost for each alternative, as provided in the handout, and noted cost for design, right-of-way, and utilities will be included in the final report.

7) Next Steps

Mr. Johnson noted the study report was scheduled to be completed by the end of the year.

8) Questions and Answers

In response to a question regarding the compatibility of Alternative 1 to I-69, Mr. Gulick stated that it doesn't fully accommodate I-69.

In reference to building the interchange project in stages, it was suggested that a discussion in the report could be added that addresses Ramp A (the northbound on-ramp) as a stand alone project. It was also suggested that Ramp A and B (the northbound off-ramp) could be built and then Ramp C and D (the southbound off-ramp) built at a later time.

Mayor Stafford asked how the KY 813 project would compare to other projects. Mr. Gulick noted that it may not be considered the highest priority project along the I-69 corridor, but having the project studied and quantified will help attract attention and potentially funding for the project. It was noted that the I-69 Study currently being conducted will help set priorities along the corridor.

In reference to the difference between Alternative 2 and 3, it was noted that Alternative 3 provides better sight distance.

Mr. Courtney noted that three school bus routes run along KY 813. No regularly scheduled busses use the ramps, but they are used when buses are taken for maintenance and when they are used to transport students on field trips.

Mr. Fox noted the high number of hunters who use the interchange during hunting season. These movements often occur early morning before sunrise. He also stated that approximately 300-400 tractor trailers use the truck stop on an average weekday. He said the numbers are less on a weekend, but that automobile traffic picks up during this time.

In response to a question regarding wrong way entry, a couple of individuals noted they had witnessed vehicles starting to turn down the wrong ramp.

With no further comments or questions, the meeting was adjourned at around 3:10 p.m.

AGENDA
Local Officials Meeting

KY 813 Interchange Study

November 2, 2006
1:30 p.m. CST
Mortons Gap Town Hall, Mortons Gap, Kentucky

1) **Welcome**

2) **Introductions**

3) **Project History and Status Update**

4) **Data Analysis**
   a) **Crash Analysis**
   b) **Traffic and Operations**

5) **Interchange Concepts**

6) **Analysis of Interchange Concepts**

7) **Next Steps**

8) **Questions and Answers**

9) **Adjourn**

MINUTES

Project Team Meeting

KY 813 Interchange Study

Hopkins County

KYTC District 2 Office
Madisonville, Kentucky
November 2, 2006 – 10:00 a.m. CST

A Project Team Meeting for the KY 813 Interchange Study in Hopkins County was conducted on Thursday, November 2, 2006, in Madisonville, Kentucky. The purpose was to discuss the project history, review the existing conditions, discuss interchange concepts, and analyze interchange concepts. A meeting agenda is attached. Meeting attendees included the following:

Craig Morris	Pennyrile ADD
Kevin McClearn	KYTC District 2, TEBM – Planning
Nick Hall	KYTC District 2, Planning
Jim Wilson	KYTC Central Office, Planning
Bill Gulick	Wilbur Smith Associates
Brad Johnson	Wilbur Smith Associates
Len Harper	Wilbur Smith Associates

Following is a summary of the key comments and discussion items for this meeting, provided in order of the meeting agenda.

1/2) Welcome and Introductions

No introductions were needed. Attendees are listed above.

3) Project History and Status Update

Mr. Johnson noted a few changes had been made to the data analysis and design alternatives and would be reviewed as part of the meeting.

4) Data Analysis

Brad Johnson described the crash analysis and traffic information presented in the meeting handouts.

a) Crash Analysis

Mr. Johnson noted that a third crash figure had been added since the last meeting to provide additional detail for Spot B. Mr. Johnson explained that the major conclusions from the analysis were that there are deceleration and acceleration related crashes, but there wasn't an apparent wrong way problem with the flopped diamond configuration.

b) Traffic and Operations

Turning movement counts, average daily volumes, and percent trucks were presented on the Traffic Volumes figure and described by Mr. Johnson.

5) Interchange Concepts

Three interchange concepts were presented in the handout materials and described by Mr. Gulick.

a) Alternative 1

Mr. Gulick noted that it was concluded that the acceleration and deceleration lengths were the primary problem. Based on this conclusion, Alternative 1 was designed to address only this issue by improving all four ramp tapers. This would be considered the minimal approach to correct the interchange deficiencies. It was noted that ramp improvements may impact KY 813 and the adjacent property.

Mr. Gulick noted that the bridge improvements would be approximately $2 million regardless of whether you widen the existing bridges or rebuild them. He also noted that the existing loop ramps meet current standards. Furthermore, he noted that the wetlands were based on the National Wetlands Inventory and additional investigation would be completed when the project moves into Phase 1 design and environmental.

Mr. McClearn stated that the District office would provide WSA with data to aid in the development of right-of-way and utility cost estimates. He asked that right-of-way maps developed as part of the study be provided to the District, but not included in the report.

b) Alternative 2

Alternative 2 is a diamond configuration offset to the west to avoid impacts to the Pilot truck stop. The existing bridge was not impacted. Mr. Gulick noted that KY 813 would be widened to a three (3) lane section and would fit within the 50-foot bridge span by reducing the shoulder to seven (7) feet. He noted that each ramp has a design speed of 50 mph.

c) Alternative 3

Mr. Gulick noted that Alternative 3 is considered closer to the ideal diamond interchange design. He noted that the Pilot truck stop entrance would need to be relocated to align opposite the KY 813 southern leg. He also noted the entrance should be the primary movement as apposed to the private road.

Craig Morris mentioned that the property owner adjacent the Pilot truck stop was interested in commercial development. Based on an investigation completed by PADD, the property wouldn't likely be suitable for development because of flooding problems.

In response to a question, Mr. Gulick noted KY 813 under the Breathitt Parkway bridge would meet a 55 mph design speed.

Mr. McClearn noted that the District on a recent transportation job was asked to do two (2) to one (1) mitigation of wetlands.

It was noted that Alternative 3 would impact existing billboards and these would need to be mitigated.

6) Analysis of Interchange Concepts Including Cost Estimates

Mr. Gulick described the construction cost for each alternative, as provided in the handout, and incorporated this into the above discussion.

7) Next Steps

Mr. Johnson noted the study report was scheduled to be completed by the end of the year.

8) Questions and Answers

Mr. McClearn asked what would be the recommendation to just fix Ramp A (the northbound on-ramp). Alternative 1 was recommended as one solution. Another solution would be to only build a portion of Alternative 2 or 3. The drawback to this solution would be the need to complete a larger than needed percentage of the environmental and design process. If the remainder of the interchange were reconstructed at a later time, the environmental investigation may have to be redone depending on how much time has passed between phases.

KYTC staff suggested WSA remove some of the detail presented on figures such as PI, POE, and similar stationing. They also suggested we include the “Unbridled Spirit” logo on the figures and asked that a date be placed on each map.

Alternative 3 was the consensus preferred alternative. However, Alternative 2 could be considered, particularly if a phased approach such as building only Ramp A was required. Alternative 1 was agreed to not be as cost effective over the long-term and not fully compatible with future I-69 improvements. For Alternative 1, the existing bridge and portions of the roadway infrastructure would only be upgraded, not replaced; therefore, the life cycle would be shorter.

With no further comments or questions, the meeting was adjourned at approximately 12:00 p.m.

AGENDA
Project Team Meeting

KY 813 Interchange Study

November 2, 2006
10:00 a.m. CST
District 2 Office, Madisonville, Kentucky

1) **Welcome**

2) **Introductions**

3) **Project History and Status Update**

4) **Update on Data Analysis**
   a) **Crash Analysis**
   b) **Traffic and Operations**

5) **Update on Interchange Concepts**

6) **Analysis of Interchange Concepts Including Cost Estimates**

7) **Next Steps**

8) **Questions and Answers**

9) **Adjourn**

APPENDIX C.

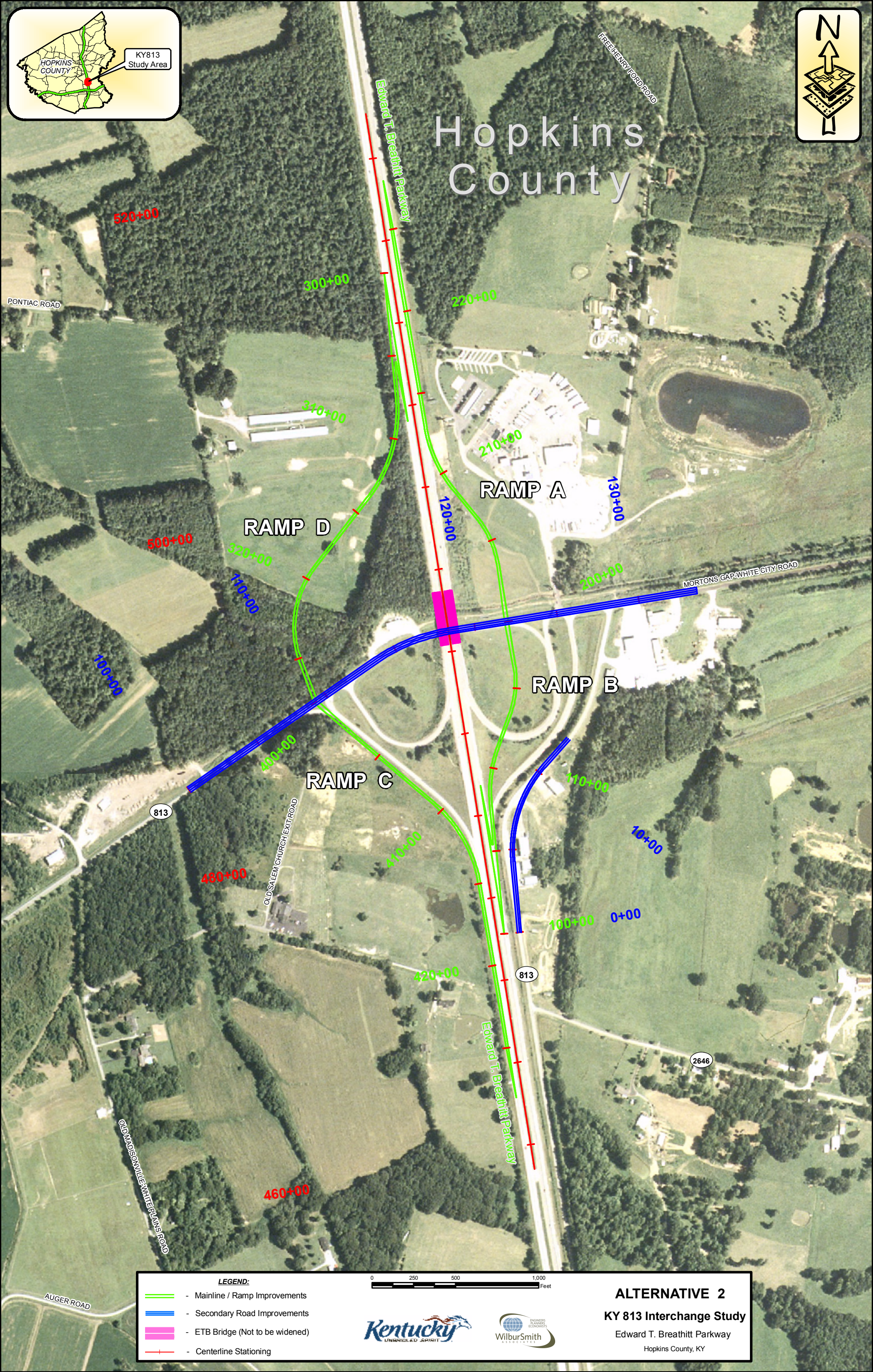
BUILD ALTERNATIVES

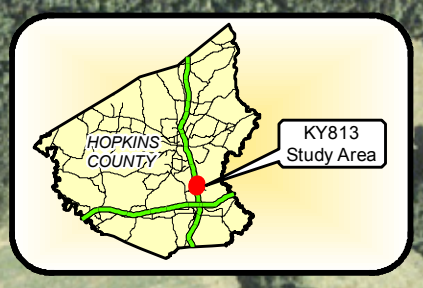
ALTERNATIVE 1

KY 813 Interchange Study

Edward T. Breathitt Parkway

Hopkins County, KY


HOPKINS COUNTY
KY813 Study Area
N
Hopkins County
Edward T. Breathitt Parkway
FREE HENRY FORD ROAD
PONTIAC ROAD
520+00
300+00
220+00
310+00
210+00
RAMP A
130+00
120+00
RAMP D
500+00
320+00
110+00
200+00
MORTONS GAP-WHITE CITY ROAD
100+00
RAMP B
400+00
RAMP C
110+00
813
OLD SALEM CHURCH EXIT ROAD
480+00
410+00
10+00
100+00
0+00
420+00
813
2646
OLD MADISONVILLE-WHITE PLAINS ROAD
460+00
AUGER ROAD
LEGEND:
- Mainline / Ramp Improvements
- Secondary Road Improvements
- ETB Bridge (Not to be widened)
- Centerline Stationing
0 250 500 1,000 Feet
Kentucky UNBRIDLED SPIRIT
WilburSmith ASSOCIATES ENGINEERS PLANNERS ECONOMISTS
ALTERNATIVE 2
KY 813 Interchange Study
Edward T. Breathitt Parkway
Hopkins County, KY



Hopkins County

Edward T. Breathitt Parkway

FREE HENRY FORD ROAD

PONTIAC ROAD

520+00

300+00

225+00

310+00

215+00

RAMP A

130+00

205+00

120+00

500+00

RAMP D

110+00

310+00

MORTONS GAP-WHITE CITY ROAD

100+00

RAMP B

120+00

55+00

RAMP C

405+00

813

OLD SALEM CHURCH EXIT ROAD

480+00

110+00

65+00

415+00

813

100+00

Edward T. Breathitt Parkway

425+00

2646

OLD MADISONVILLE-WHITE PLAINS ROAD

460+00

AUGER ROAD

LEGEND:

- Mainline / Ramp Improvements
- Secondary Road Improvements
- ETB Bridge (Not to be widened)
- Centerline Stationing

0 250 500 1,000 Feet

Kentucky UNBRIDLED SPIRIT

WilburSmith ASSOCIATES ENGINEERS PLANNERS ECONOMISTS

ALTERNATIVE 3

KY 813 Interchange Study

Edward T. Breathitt Parkway

Hopkins County, KY